RePower

Repower BMS-6V3A-64S-600A
Technical Specification

Model： BMS-6V3A-64S-600A

Shenzhen RePower Technology Co., Ltd

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1. BMS Battery Management System Test Platform

1.1. Overview

The Ruineng BMS test system comprises high - precision analog cell units, programmable resistance units, signal simulation and detection units, charge - discharge current signal simulation units, high - voltage programmable DC power supplies, high - power programmable resistance units, digital and analog I/O modules, communication units, and software control systems. It enables the testing of BMS functions and parameters via upper - computer software control, and also allows for the storage of test results.

This equipment boasts remarkable expandability and excellent compatibility. It supports the functional testing of battery management systems (both integrated and master - slave distributed BMS) based on various materials, including lithium iron phosphate, ternary materials, lithium cobaltate, lithium manganate, and lithium titanate. It is extensively utilized in the research, development, testing, and production quality control of power battery management systems, and is applicable to sectors such as university scientific research and testing institutions.

1.2. Features

Product Design:

Modular design

Bidirectional design for simulating battery current, supporting active and passive balancing functions

Independent power supply and communication for each module

High precision output and measurement

Reserved upgrade expansion interface

High voltage signal simulation, capable of real output of 1500V voltage

High current signal simulation,

Product Operation:

High integration, flexible and convenient usage

Software-controlled, supporting one-key start test

Universal plug terminal, quick replacement

Product Reliability:

Multiple protections to ensure safe use of the equipment

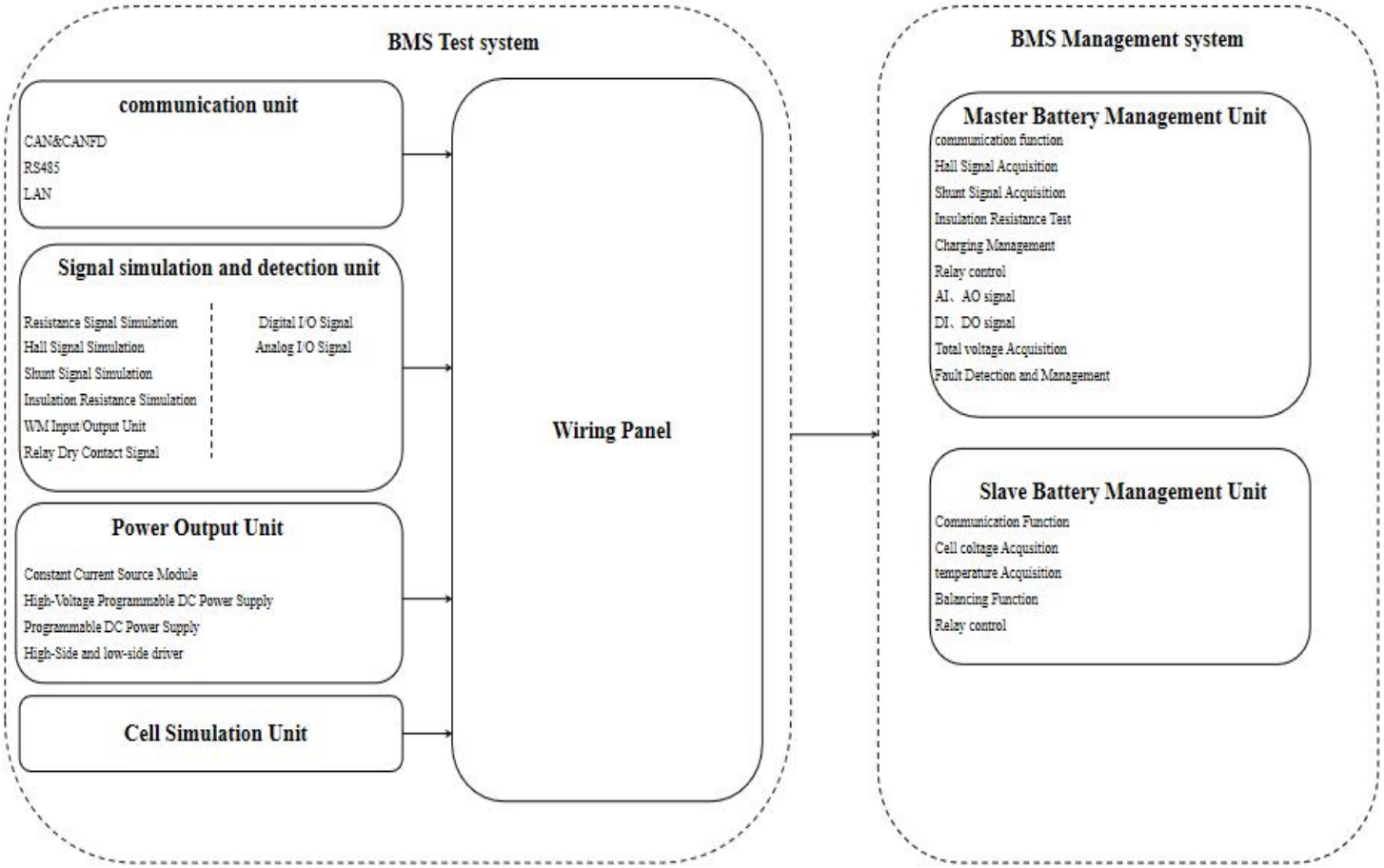
Supports long-term working conditions, aging, and reliability tests

Product Application:

Good compatibility, capable of detecting various BMS

Wide application, suitable for R&D, production, scientific research/testing institutions

1.3. BMS Battery Management System Test Platform Block Diagram



2. BMS Battery Management System Test Function

Slave - controll test items	
No.	**Items**
1	Single cell quiescent current measurement
2	Power-on power consumption measurement
3	Power-off power consumption measurement
4	Sleep mode power consumption measurement
5	Voltage measurement of balanced on & off
6	Current measurement balanced on & off
7	Single cell voltage comparison measurement

8	Single cell temperature comparison measurement
Master control test items	
No.	**Items**
1	Total Power Consumption Test
2	Total voltage comparison measurement
3	Total current comparison measurement
4	SOC calibration and measurement
5	Insulation impedance comparison test
6	Relay on-off test
7	PWM signal test
8	Alarm test for high voltage of single cell
9	Alarm test for low voltage level of single cell
10	Alarm test for high temperature of single cell
11	Alarm test for low temperature of single cell
12	Alarm test for overcurrent level of Charge and discharge
13	Alarm test of Insulation level
14	Alarm test of SOC too high or too low level
15	Relay adhesion simulation test
16	Test of high and low level alarm of total voltage
17	Collision signal warning test
18	Alarm Test for single Cell Voltage Differential Level
19	Alarm Test for single Cell temperature Differential Level
20	Communication open Circuit Fault Simulation Test
Free debugging for 2 BMS protocols	

3. Composition and Technical Solutions of the BMS Testing Equipment

3.1. Detailed Composition

No.	Names of Parts （description）	Specification/code	Quantity	Unit	Remack
1	RePower Virtual Battery Cell	VBS-6V3A	64	channel	Provide CELL (10mV - 6000mV) voltage simulation, with each CELL independently isolated
2	Programmable resistor unit	RP-RES-CK-01	32	channel	NTC resistance simulation
3	High voltage programmable DC power supply	1000V0.9A 900W	1	pcs	The voltage can be adjusted from 10V to 1000V, serving for total votage teat and Insulation impedance test

4	Constant Current Source Module	CCS-600A	1	pcs	Current singal,the real current but not simulate
5	Programmable DC power supply	36V15A	1	pcs	Power suppply for BMS;measurement of power consumption
6	High-Low Side Driver Test Module	36V3A	4	channel	High-Low Side Drive:Send a drive signal to the BMS or work as a linear load
7	High power programmable resistance unit	RP-HPRES-CK-01	2	channel	Insulation resistance simulation
8	Signal simulation and detection unit	RP-ADPIO	1	pcs	Input and output with 0.1Hz to 100 KHz :AI,AO,DI,DO
9	Hall analogue and shunt simulation unit	5V/200mV 200mA	1	Channel	It is divided into two ranges. The first range is 200mV, which serves as a shunt simulation unit; the second range is 5V, which serves as a Hall analogue unit
10	CAN communication unit	\	1	pcs	Interface of CAN Communication for Data Exchange Between Host Computer and BMS
11	RS485 Communication unit	RP-RS485	1	pcs	Interface of RS485 Communication for Data Exchange Between Host Computer and BMS
12	Cabinet	RP-39U	1	pcs	
13	Computer	I5/16G/500G	1	pcs	
14	Software System	BMS test software	1	pcs	

3.2. BMS Testing Platform Specifications

1、Virtual Battery Cell	
Number of channels	64 Channels
Work Model	Bidirectional current, output (Source) / absorption (Sink)
Voltage range	0.05~6V

Voltage resolution	0.01mV
Voltage output accuracy （@25±5℃）	±1mV
Voltage acquisition accuracy（@25±5℃）	±1mV
3A current range	±3000mA
3A current resolution	0.01mA
3A current output accuracy（@25±5℃）	±0.7mA
3A current acquisition accuracy（@25±5℃）	±0.7mA
200mA current range	±200mA
200mA current resolution	0.01mA
200mA current output accuracy（@25±5℃）	±0.06mA
Current acquisition accuracy at 200mA （@25±5℃）	±0.06mA
2mA Current ranges	0~2mA
The current resolution of 2mA	0.01uA
2mA current output accuracy（@25±5℃）	±1uA
2mA current acquisition accuracy（@25±5℃）	±1uA
2、Programmable resistor unit	
Number of channels	32 channels
Signal type	Resistance signal
Resistance range	10Ω~12MΩ
Resistance resolution	1Ω
Resistance accuracy（@25±5℃）	±0.15%+1Ω
Simulated temperature range	-50℃~150℃
3、High voltage programmable DC power supply	
Number of channels	1channel
Voltage range	10~1000V
Voltage resolution	100mV
Voltage output accuracy（@25±5℃）	±0.1%FS
Voltage acquisition accuracy（@25±5℃）	±0.1%FS
Current range	0~900mA
Current resolution	1mA
Output power	900W
4、Constant Current Source Module	
Number of channels	1channels
Voltage range	MAX 5V
Current range	±600A
Current resolution	10mA
Current output accuracy（@25±5℃）	±0.05%FS
Current acquisition accuracy（@25±5℃）	±0.05%FS

5、Programmable DC power supply	
Number of channels	1channels
Voltage range	0.1~36V
Voltage resolution	1mV
Voltage output accuracy（@25±5℃）	±0.05%FS
Voltage acquisition accuracy（@25±5℃）	±0.05%FS
15A Current range	0~15A
15A Current resolution	0.1mA
15A Current output accuracy（@25±5℃）	±0.05%FS
15A Current acquisition accuracy（@25±5℃）	±0.05%FS
3A Current range	0~3A
3A Current resolution	0.01mA
3A Current output accuracy（@25±5℃）	±0.05%FS
3A Current acquisition accuracy（@25±5℃）	±0.05%FS
10mA Current range	0~10mA
10mA Current resolution	0.1uA
10mA Current output accuracy（@25±5℃）	±0.05%FS
10mA Current acquisition accuracy（@25±5℃）	±0.05%FS
Maximum output power	540W
6、High-Low Side Driver Test Module	
Number of channels	4 channels
Voltage range	0.1~36V
Voltage resolution	10mV
Voltage output accuracy（@25±5℃）	±0.1%FS
Voltage acquisition accuracy（@25±5℃）	±0.1%FS
Current range	±3A
Current resolution	1mA
Current output accuracy（@25±5℃）	±0.1%FS
Current acquisition accuracy（@25±5℃）	±0.1%FS
Single channel power	108W
7、High power programmable resistance unit	
Number of channels	2 channels
Signal type	Resistance signal
Resistance range	100Ω~100MΩ
Resistance resolution	10Ω
Resistance accuracy	±1%+10Ω
8、Signal simulation and detection unit	
Number of PWM output channel	4 channels

PWM output frequency	0.1Hz~100KHz
Duty cycle ranges	5%~95%
The amplitude	±12V
Number of PWM detection channels	4 channels
PWM detection frequency ranges	0.1Hz~100KHz
Duty cycle ranges	5%~95%
Number of analog input detection (AI) channels	16 channels
Analog input detection (AI) range	±36V
Analog input detection (AI) accuracy（@25±5℃）	±0.1%FS
Number of analog output (AO) channels	8 channels
Analog output (AO) voltage range	0.1~36V
Analog output (AO) current range	0~10mA
Analog output (AO) voltage accuracy（@25±5℃）	±0.1%FS
Number of digital input detection (DI) channels	16 channels
Digital input Detection (DI) Type	High level（number 1）：+2.5V~30V Low level（number 0）：<=+1V
Digital Output (DO) channels	16 channels
Digital Output (DO) Type	Switching signal output （2A/30VDC）
9、Hall analogue and Shunt simulation units	
Number of channels	1channel
Voltage range	0.01~5V
Voltage resolution	0.01mV
Voltage output accuracy（@25±5℃）	±0.5mV
Voltage acquisition accuracy（@25±5℃）	±0.5mV
Current range	0~200mA
Current range of the shunt	0.04~200mV
Voltage resolution of the shunt	0.01mV
Voltage output accuracy（@25±5℃）of the shunt	±0.04mV
Voltage acquisition accuracy（@25±5℃） of the shunt	±0.04mV
Current range of the shunt	0~200mA
10、CAN Communication Unit	
Number of CAN channels	4 channels
CAN Communication Protocol	CAN2.0A 和 CAN2.0B

Communication baud rate	40Kbps~1Mbps
Interface Mode	LAN
11、RS485 Communication Unit	
Number of channels	1 channel
Communication baud rate	2400bps~115200bps
Interface mode	Serial port
12、Computer	
Number	1 Unit
Component configuration	CPU i5;memory 16G;solid state drive 500G;dual network ports
Display	21.5Inch
Mouse	Wired mouse
Keyboard	Wired keyboard

4. Data Storage

a. The software at each test station can automatically save test data and results (locally and to SQL)

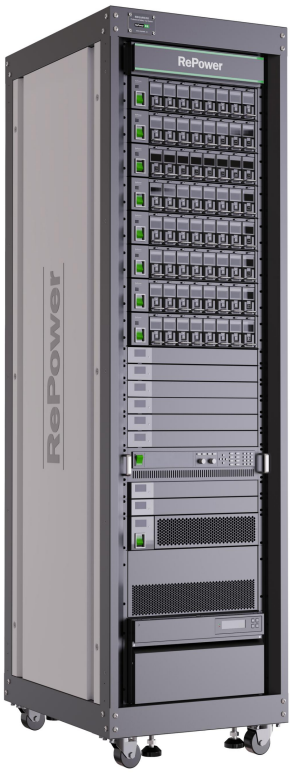
b. The software at each station can connect to the customer's MES system to check the test results of the previous station before testing.

c. The test data can be configured with customized storage paths.

d. Test data can be queried according to specified conditions.

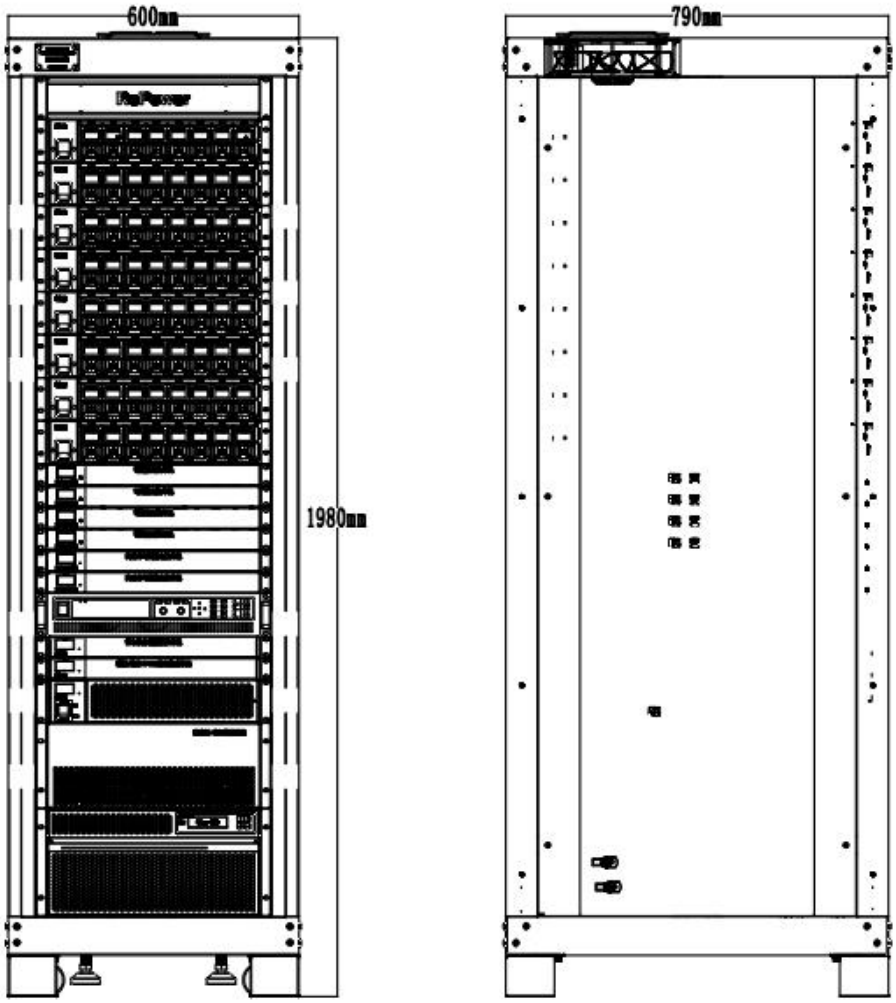
5. Equipment Appearance and Structure

5. 1. Appearance

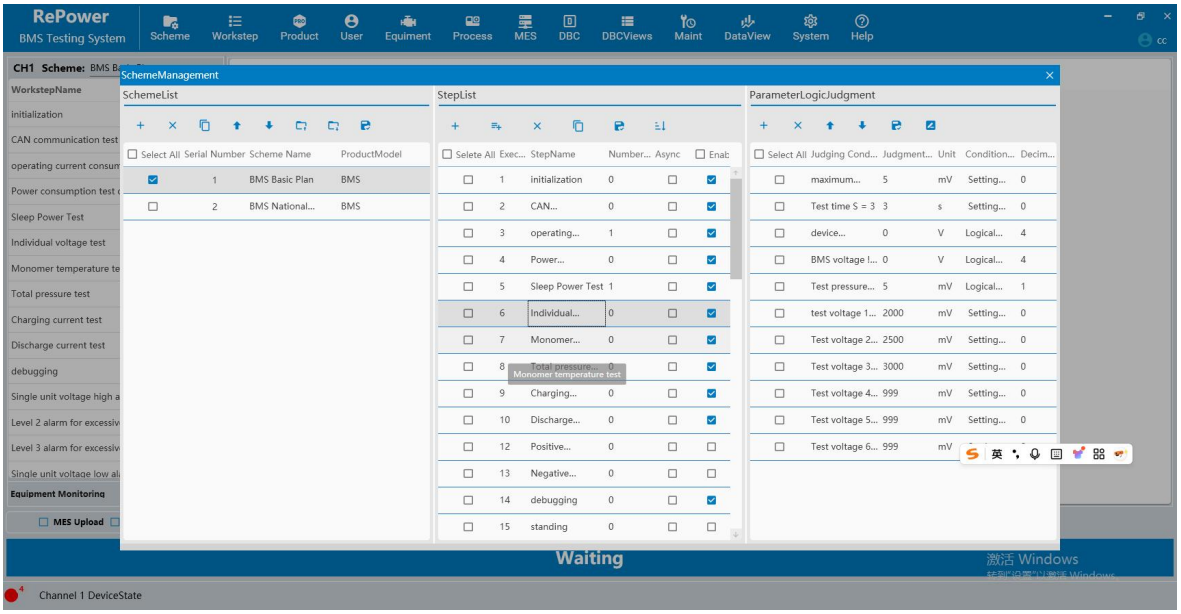


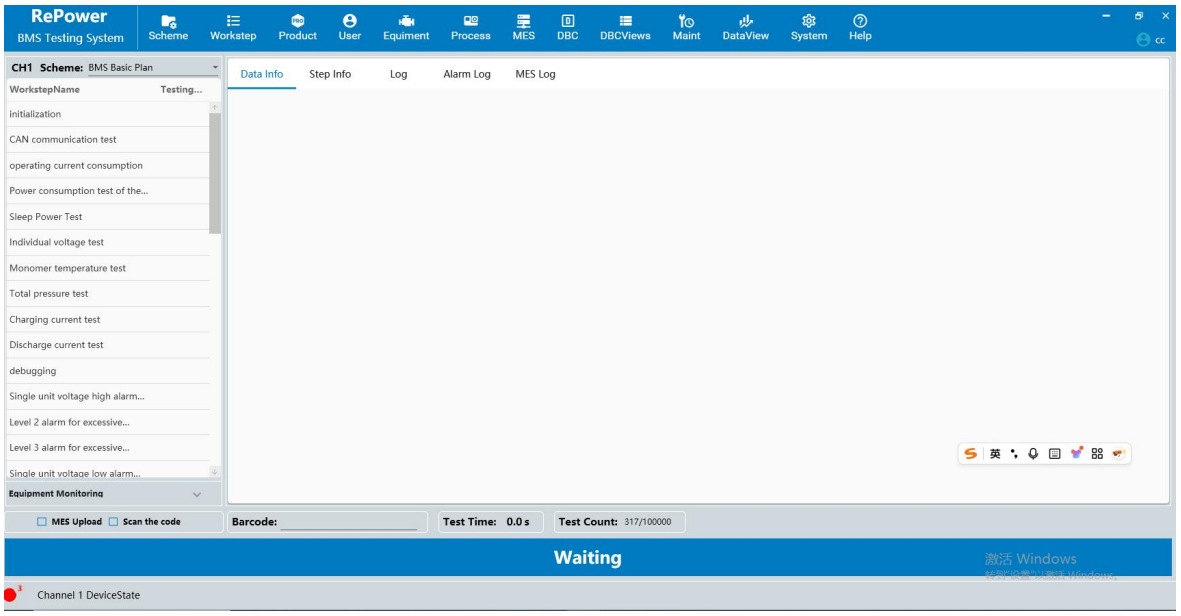
Note: Different functional devices have different appearances; actual delivery shall prevail.

5.2. Sturcture Dimensions(mm)



6. Software





7. Equipment Basic Parameters

No.	Item	Technical paremeters
1	Dimensions	≤600*800*1980mm（W*D*H）

2	Weight	≤350KG
3	Number of equiment Channal	1 Channel
4	Operation mode	Manual wiring, automatic testing, can test one product at a time
5	Input	AC220V±10%， 50HZ±5% and Current source powered AC380V±10%，50HZ±5%
6	Power	≤8KW
7	Dustproof, Heat Dissipation	with dustproof and heat dissipation devices
8	Cooling system	Air
9	Working Environmental temperature	0℃～45℃
10	Storage Temperature	-10℃～70℃
11	Operational relative Humidity	30%～85%（RH non-condensing）
12	Environment Requirement	1. The environment should be free from strong vibrations, corrosive gases, metal powders, dust, and flammable or explosive gases. 2. The equipment should maintain an appropriate distance from walls or other objects to allow for ventilation and heat dissipation

8. Description of Supply Scope

No.	Item	Customer	Supplier

1	BMS acquisition line, Connection line, Output line, Dedicated connector	√	
2	Test fixtures and jigs	√	
3	Testing equipment and test cabinet (including internal circuits)		√
4	Test computer (mouse/keyboard/monitor, etc.)		√
5	Testing software for the BMS of supplier		√
6	Connection Services Between BMS tester of supplier and MES of customer		√

Note:The supply scope has been shown above. The supply scope shall be used as the basis for separate acceptance

9. Conact Information

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